IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Kai Dölling and Andrea Brasch	§	Attorney Docket No.:	Muller-52
U.S. Serial No.:	10/564,244	§	Art Unit:	1793
U.S. Filing Date:	June 5, 2006	§	Confirmation No.:	8017
Title:	*Process for Preparing Boehmitic Aluminas Having a High α-Conversion Temperature*	§	Examiner:	Fiorito, James

DECLARATION PURSUANT TO 37 CFR §1.132

I, Mr. Kai Dölling declare as follows:

I am a named inventor on the captioned Application;

It is my understanding that Claims 1-4, 6-12 and 14-17 have been rejected under 35 U.S.C. 13(a) as obvious over Koch (U.S. 3,152,865) in view of Noweck (U.S. 6,773,690);

I conducted experimental work to demonstrate the unexpected benefits that are achieved by the method and the aluminas in accordance with the present invention, relative to the conventional boehmitic aluminas produced according to Koch and Noweck.

Example VIII (see Table 1) of Koch, et al., was duplicated using aluminum triisopropoxide, which was hydrolyzed in an aqueous environment at 30° to 35° C in the presence of 1.2 weight percent tartaric acid (relative to the amount of Al_2O_3). After hydrolysis, a pH value of 8.9 was measured. Koch specified pH values of 8.8 (cf; Koch, et al.: Table 1). The slurry obtained was allowed to stand

for one day. Thereafter, a filter cake was obtained through filtration and washing with water in order to minimize the amount of isopropanol. One part of the filter cake so obtained was dried at 120°C and pulverized. X-ray diffraction analysis showed formation of aluminum hydroxide was restrained. Analysis by DTA/TG showed an alpha-Al_2O_3 conversion temperature of 1198°C;

In order to demonstrate that the combination of hydrolysis according to Koch and hydrothermal aging as disclosed in Noweck does not result in the boehmitic aluminas according to the present invention, a second part of the filter cake was suspended in water and aged hydrothermally at 210°C for five hours (cf. Noweck).: Claim 1.) The pH value of the aged slurry was 5.2. The slurry was spray dried. Analysis by DTA/TG showed an alpha-Al_2O_3 conversion temperature of 1294°C.

The above is to be contrasted with the aluminas obtained according to Example 5 of the present Application, which was aged under comparable conditions (five hours at 210° as disclosed in Noweck.) However, the boehmitic alumina produced according to Example 5 of the present invention had a significantly higher alpha-Al_2O_3 conversion temperature of 1406°C.

Thus, as demonstrated by the above comparison, the combination of hydrolysis according to Koch and hydrothermal aging according to Noweck does not result in the inventive boehmitic aluminas of the present invention;

According to the present invention as set forth in the claims, the hydrolysis is carried out at a pH above 9.5 in order to obtain a pH above the isoelectric point

of boehmite in the slurry following the hydrolysis. The isoelectric point of boehmite is pH 9.1 or higher depending on the electrolyte used.

Attached is Exhibit A, which is a graph (Fig. 8) from a publication which shows the zeta potential of an aqueous alumina dispersion as a function of pH. Before aging, all samples of the present invention show a pH value above the isoelectric point. Therefore, they have a negative electric particle charge.

Koch and Noweck however, disclose that in all examples the pH is below 9.1. This means below the isoelectric point. Therefore, the particles produced by Koch and Noweck have a positive or at least neutral electrical charge.

The electric charge of the particles in the slurry after hydrolysis affects the structure of the aluminas obtained. Neither Koch nor Noweck recognize the importance of addressing the pH value during hydrolysis.

I hereby declare that all statements made herein are of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Kai Dölling

Date: February 16, 2011

EXHIBIT A

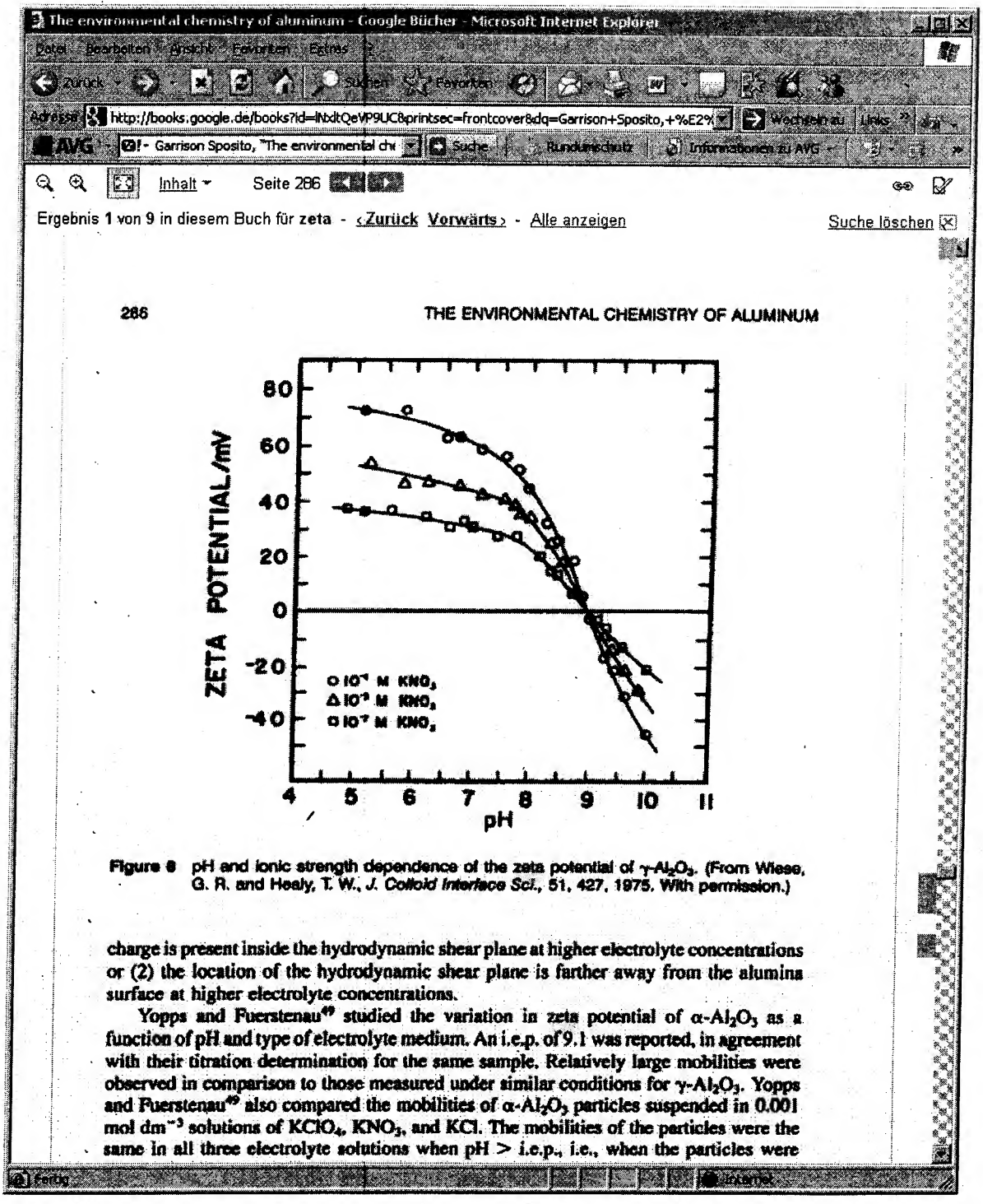

Figure 8 pH and ionic strength dependence of the zeta potential of γ-Al_2O_3. (From Wiese, G. R. and Healy, T. W., *J. Colloid Interface Sci.*, 51, 427, 1975. With permission.)

charge is present inside the hydrodynamic shear plane at higher electrolyte concentrations or (2) the location of the hydrodynamic shear plane is farther away from the alumina surface at higher electrolyte concentrations.

Yopps and Fuerstenau[49] studied the variation in zeta potential of α-Al_2O_3 as a function of pH and type of electrolyte medium. An i.e.p. of 9.1 was reported, in agreement with their titration determination for the same sample. Relatively large mobilities were observed in comparison to those measured under similar conditions for γ-Al_2O_3. Yopps and Fuerstenau[49] also compared the mobilities of α-Al_2O_3 particles suspended in 0.001 mol dm^{-3} solutions of $KClO_4$, KNO_3, and KCl. The mobilities of the particles were the same in all three electrolyte solutions when pH > i.e.p., i.e., when the particles were